EvenAir® **T21WF**

THERMOSTAT WITH AIRFLOW CONTROL

The EvenAir WiFi thermostat controls heating, cooling and AIRFLOW to the sleeping and living areas in a home and provides remote access to your HVAC system using a smart phone, tablet or PC. The thermostat is installed in the downstairs living area, a temperature sensor is installed in the upstairs bedroom area and two modulating dampers are installed to control the airflow to the living and sleeping area.

The EvenAir thermostat monitors the temperature at the sensor and the temperature at the thermostat every 2 minutes during heating and cooling calls. If the temperatures are different, the EvenAir thermostat automatically adjusts the modulating dampers 2% so that more airflow is directed to the space that needs it for a uniformly comfortable home.

COMPONENTS:
   EvenAir T21WF Thermostat
   EvenAir TS51 or TS52 Wired Temperature Sensor(s) (sold separately)
   EvenAir AMT Type Motorized Damper, With Terminals (sold separately)

READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY BEFORE PROCEEDING WITH THE INSTALLATION.

This device MUST be installed by a qualified agency in accordance with the manufacturer's installation instructions. The definition of a qualified agency is: any individual, firm, corporation or company which either in person or through a representative is engaged in, and is responsible for, the installation and operation of HVAC applicances, who is experienced in such work, familiar with all the precautions required, and has complied with all the requirements of the authority having jurisdiction.

Please retain these instructions after installation.

Installed By:_____   Phone: _____   Installation Date: _____

Thank you for purchasing the EvenAir System from Field Controls. The EvenAir products are compatible with any HVAC system having accessible 24VAC terminals.

FEATURES

SYSTEM MODES
Off, Heat, Cool, Auto

FAN MODES
Auto or Continuous

THERMOSTAT MODES
Hold, Schedule or Vacant

PROGRAMS PER DAY
Morning, Daytime, Evening and Night

PROGRAM FORMAT
Weekdays and weekend – 5/2

TEMPERATURE OVERRIDE
Temperature is held for 3 hours when adjusted in Schedule mode.

AIRFLOW OVERRIDE
The airflow to the living area or sleeping area can be adjusted. After 3 hours, the thermostat returns to automatic airflow control.

AIRFLOW CONTROL
Airflow control can be turned off and the thermostat will operate as a typical thermostat.

AIRFLOW LIMITS
Maximum airflow limits can be set for heating and cooling modes during installation.

NIGHTTIME OPERATION
At night, the EvenAir thermostat uses the temperature sensor in the sleeping area to control heating and cooling calls and directs more airflow to the sleeping area.

COMPATIBLE EQUIPMENT
Gas/electric equipment with 2-stage heating and 1-stage cooling or 1-stage heating and 2-stage cooling and heat pumps with 2-stage heating and 2-stage cooling.

TEMPERATURE SENSOR
One TS51 sensor or two TS52 temperature sensors can be used in the sleeping area.

MODULATING DAMPERS
Round or rectangular dampers using the AMT actuator and up to 1 inch static pressure.
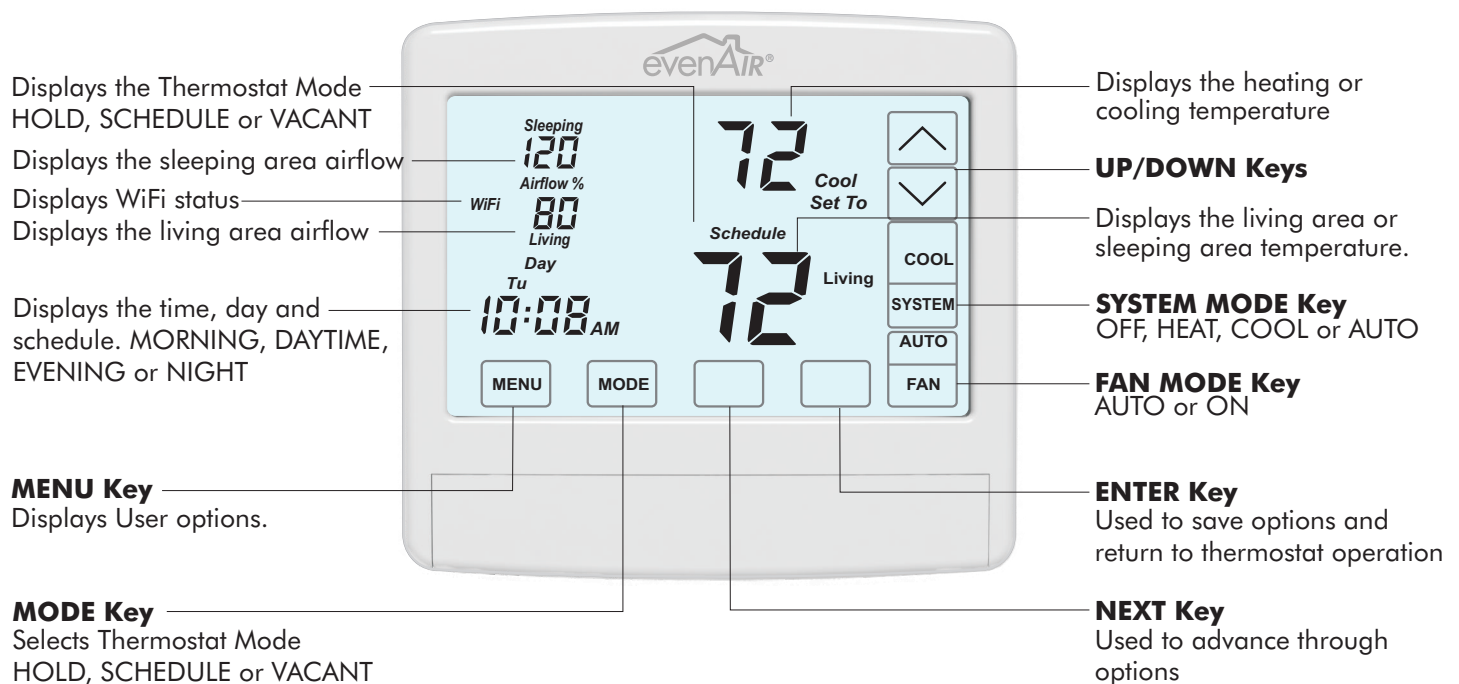
WiFI
Connects to the home WiFi network to provide remote access via the internet using smart phone, tablet or PC.

POWER
Operates on 24VAC from the HVAC equipment using the R and C wires.

THERMOSTAT OVERVIEW

⚠ Press the touchscreen with your fingertip only, using a firm touch. Do not use a sharp object such as a pen or pencil. The touchscreen is a resistive touch and responds differently than touchscreens found in smart phones/devices.

Displays the Thermostat Mode HOLD, SCHEDULE or VACANT

Displays the sleeping area airflow

Displays WiFi status

Displays the living area airflow

Displays the time, day and schedule. MORNING, DAYTIME, EVENING or NIGHT

MENU Key
Displays User options.

MODE Key
Selects Thermostat Mode HOLD, SCHEDULE or VACANT

Displays the heating or cooling temperature

UP/DOWN Keys

Displays the living area or sleeping area temperature.

SYSTEM MODE Key
OFF, HEAT, COOL or AUTO

FAN MODE Key
AUTO or ON

ENTER Key
Used to save options and return to thermostat operation

NEXT Key
Used to advance through options

HOMEOWNER SECTION

HOMEOWNER

This manual is separated into two different sections: one for the Homeowner and one for the System Installer.

The Homeowner section contains information on features and operation of the thermostat along with optional user settings available to the homeowner.

THERMOSTAT OPERATION AND USER SETTINGS

- Features
- EvenAir Thermostat Operation
  1. Set Time and Day
  2. Set System Mode
  3. Set Fan Mode
  4. Set Thermostat Mode
  5. Changing Setpoint Temperature
  6. Temperature Override
  7. Displaying Upstairs Temperature
  8. Overriding Automatic Airflow
  9. Terminating Automatic Airflow

- User Options
  1. Set Schedule
  2. Turn Automatic Airflow Control On/Off
  3. Turn Nighttime Airflow Control On/Off
  4. Set Nighttime Airflow in Heating
  5. Set Nighttime Airflow in Cooling
  6. Clean the Touchscreen
  7. Turn Thermostat WiFi On
  8. Start Linking WiFi Thermostat

- Install Batteries

FEATURES

DISPLAYING THE LIVING AND BEDROOM AREA TEMPERATURE

The living area temperature is normally displayed. The bedroom area temperature can be displayed by touching Living on the touchscreen. The temperature will change to the bedroom space temperature, indicated by Sleeping. Touch Sleeping to return to displaying the Living area temperature.

NIGHTTIME AIRFLOW CONTROL

The Nighttime Airflow Control option is an energy saving feature where the thermostat uses the temperature sensor in the bedroom area to control heating and cooling calls and directs more airflow to the bedroom area at night and less airflow to the unoccupied living area. Nighttime Airflow Control begins at 10:00pm but can be changed by accessing the schedule in the User Options. The airflow to the bedroom space defaults to 130% but can be adjusted for both heating and cooling in the User Options. Nighttime Airflow Control is defaulted to On but can be turned Off in the User Options. The homeowner should consider turning this option off if bedrooms are located on the same floor as the living area and using the same airflow trunk as the living area.

AUTOMATIC OR MANUAL AIRFLOW CONTROL

Automatic Airflow Control is the thermostat default and is typically used by homeowners to maintain uniform comfort throughout the home. However, homeowners with unusual work schedules, home offices, etc. may want to use the manual airflow control feature. This features allows the homeowner to change the airflow level as desired and hold that level indefinitely. This feature needs to be enabled using Installer Option 18. The homeowner then needs to turn automatic airflow control off using the User Options. The Nighttime Airflow Control option is still enabled but can be turned off, if desired, using the User Options.

AIRFLOW OVERRIDE

On occasion, homeowners may want to direct more airflow to an area. For example, during a party, more airflow may be desired in the living area. The homeowner sets the airflow level to the area and the thermostat will hold the airflow for 3 hours. After 3 hours, the thermostat returns to automatic airflow control.

AIRFLOW CONTROL TURNED OFF

In some installations, the EvenAir thermostat has been installed to control the system only. The thermostat operates just like any other thermostat. The airflow control options are disabled and airflow is no longer displayed on the thermostat.
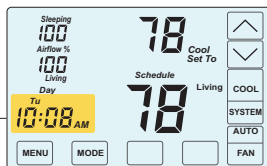
WiFi REMOTE ACCESS

The EvenAir WiFi thermostat connects to the home's WiFi network and provides remote access, via the internet, to your home's heating and cooling system from anywhere using a smart phone, tablet or PC.

THERMOSTAT OPERATION
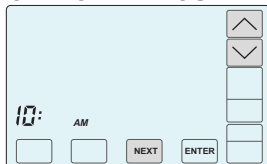
1 Set Time and Day

Touch here to change the time and day of the week.
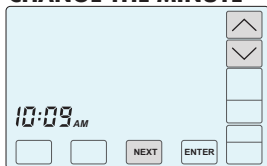
CHANGE THE HOUR

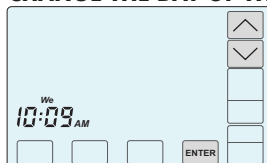Touch the UP/DOWN keys to change the HOUR.

Touch NEXT.

CHANGE THE MINUTE

Touch the UP/DOWN keys to change the MINUTE.

Touch NEXT.

CHANGE THE DAY OF THE WEEK

Touch the UP/DOWN keys to change the DAY OF THE WEEK.

Touch ENTER.

! Depending on the mode, setting the time may reset the setpoint temperature to the factory default heating or cooling setpoint.

2 Set System Mode

Touch the SYSTEM key to display the SYSTEM MODES: OFF, HEAT, COOL or AUTO. In AUTO or OFF, the setpoint for the last system call is displayed.
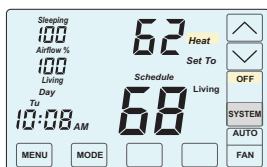
OFF
Heating and cooling systems are off.
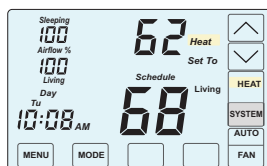
HEAT
Only heating calls are enabled and heating setpoint is displayed. "HEAT" will blink in an active heating call.
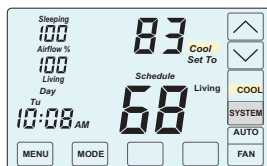
COOL
Only cooling calls are enabled and cooling setpoint is displayed. "COOL" will blink in an active cooling call.
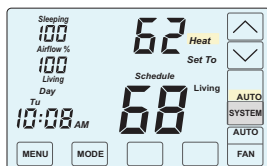
AUTO
Heating or Cooling calls are enabled. "HEAT" will blink in an active heating call or "COOL" will blink in an active cooling call.

3 Set Fan Mode

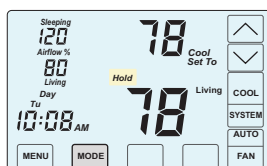Touch the FAN key to change the FAN MODES - AUTO or ON.
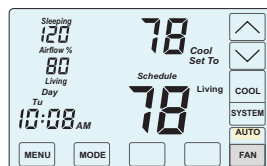
AUTO
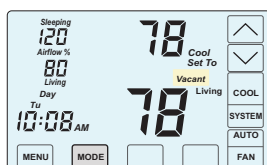Fan is activated only during heating or cooling calls. This is the most commonly used setting.
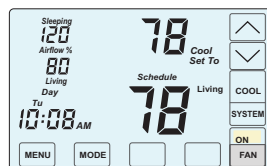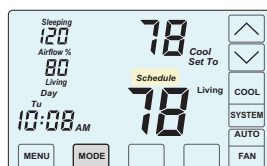
ON
Fan is continuously on.

4 Set Thermostat Mode

Touch the MODE key to display the THERMOSTAT MODES: **HOLD, VACANT and SCHEDULE**.

HOLD MODE
Setpoint temperatures are set by the user. No schedule is used.
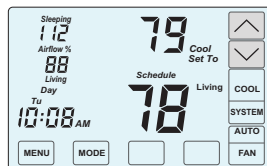
VACANT MODE
Setpoint temperatures are kept at the vacant temperatures set by the installer.

SCHEDULE MODE
Setpoint temperatures are changed at scheduled times defined by the user.
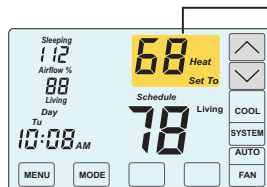
5 Changing the Setpoint Temperature

The UP/DOWN keys are used to change the setpoint temperature.

Touch the UP key to raise setpoint temperature.

Touch the DOWN key to lower setpoint temperature.

An active heating call is indicated by HEAT blinking. An active cooling call is indicated by COOL blinking.

Touch here to display and change the opposing setpoint temperature.

Touch the UP/DOWN keys to change the setpoint temperature for the opposing system. The thermostat will return to displaying the active setpoint after about 30 seconds.

6 Temperature Override

To override the setpoint temperature:
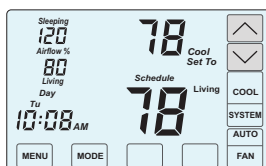
Touch the UP/DOWN keys to adjust the setpoint temperature.

After 3 hours, the thermostat returns to normal thermostat operation.

7 Displaying the Upstairs Temperature

The thermostat displays the temperature in the downstairs living area and is indicated by Living. The temperature in the upstairs sleeping area is indicated by Sleeping. When the thermostat enters Night Mode, the upstairs sleeping area temperature will be displayed, indicated by Sleeping.
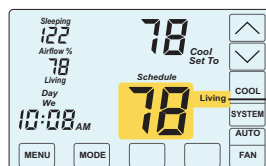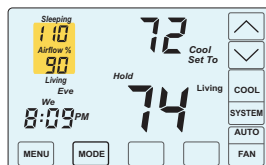
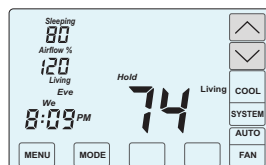Press Living to display the upstairs Sleeping area temperature.
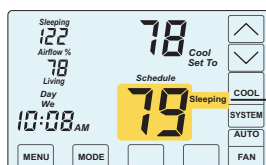
The upstairs Sleeping area temperature is now displayed.

Press Sleeping to display the Living area temperature.
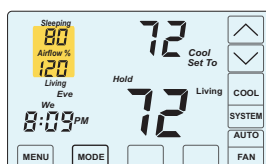
8 Overriding Automatic Airflow

Touch the Airflow % area to override AUTOMATIC AIRFLOW to the living area or the upstairs sleeping area.

Touch the UP key to increase the airflow to the sleeping area or touch the DOWN key to increase airflow to the living area.

Airflow % will blink to indicate airflow override. After 3 hours, the thermostat returns to automatic operation. The override range is defined by the installer during set up.

9 Terminating Airflow Override

To terminate Airflow Override, touch the AIRFLOW% area.
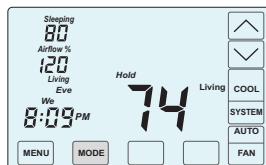
Then touch the MODE key.

The thermostat returns to automatic airflow control. The AIRFLOW % returns to the airflow prior to the override.

USER OPTIONS

Factory Set Schedule

The thermostat comes pre-set with the following energy-saving schedule for weekdays (Mon-Fri) and weekends (Sat-Sun). Using these settings can reduce your heating/cooling expenses.

Monday - Friday	Time	Heat	Cool
Morn	6:00 AM	70	75
Day	8:00 AM	62	83
Even	6:00 PM	70	75
Nite	10:00 PM	62	78

| Saturday & Sunday	Time	Heat	Cool
Morn	6:00 AM	70	75
Day	8:00 AM	62	83
Even	6:00 PM	70	75
Nite	10:00 PM	62	78

1 Change Factory Set Schedule
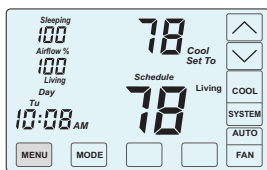
Touch the MENU key to display SCHEDULE. If no key is touched, the thermostat returns to normal operation after about 30 seconds.
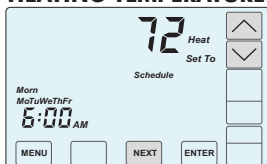
SELECTING THE WEEKDAY OR WEEKEND SCHEDULE
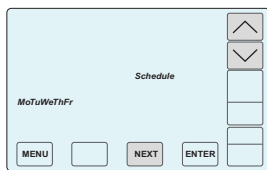
Touch the UP key to select the weekday schedule (MoTuWeThFr) or touch the DOWN key to select the weekend schedule (SaSu). Touch NEXT.

SETTING THE MORNING SCHEDULE START TIME.
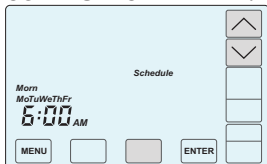
Touch the UP/DOWN keys to change the Morning Start Time. Touch NEXT.

SETTING THE MORNING HEATING TEMPERATURE.

Touch the UP/DOWN keys to change the Morning Heating Setpoint. Touch NEXT.

SETTING THE MORNING COOLING TEMPERATURE.

Touch the UP/DOWN keys to change Morning Cooling Setpoint. Touch NEXT.

Continue setting the start times, heating setpoints, cooling setpoints for the Day, Evening and Night schedules.

Touch ENTER to save the schedule.

2 Automatic Airflow Control On or Off

This option is only displayed if User Airflow Control has been turned On by the installer in the Installer Options.

Homeowners with an unusual schedule, home office, etc. may want to use this option.

With Automatic Airflow Control Off, the Nighttime Airflow option is still enabled. If desired, the homeowner can turn the Nighttime Airflow option off using User Options.

Touch the MENU key until the following thermostat screen is displayed.
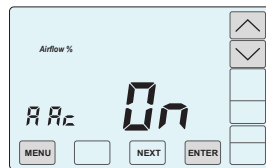
Thermostat defaults to Automatic Airflow Control On and automatically directs more airflow to where it's needed.
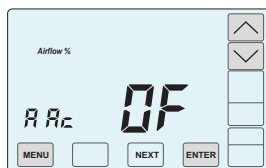
To turn Automatic Airflow Control OFF, touch the DOWN key. The user must set the airflow when airflow control is off.
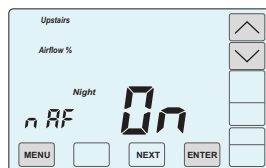
Touch the MENU key to save and go to next option or touch the ENTER key to save the options and return to normal thermostat operation.

3 Nighttime Airflow Control On or Off

This option is not displayed if Nighttime Airflow Control has been turned off by the installer using the Installer Options.

If bedrooms are located downstairs, consider turning the Nighttime Airflow Control OFF.

NIGHTTIME AIRFLOW CONTROL defaults to On and is used to save energy. The thermostat uses the temperature sensor in the sleeping area for controlling heating and cooling calls. The airflow is increased to 130% to the sleeping area and the airflow is reduced to 70% to the unused living area. The thermostat displays the sleeping area temperature.

Touch the MENU key to display NIGHTTIME AIRFLOW indicated by nAF On or Off.

Touch the UP key to turn the option ON. Touch the DOWN key to turn the option OFF.

Touch the MENU key to save and go to next option or touch the ENTER key to save the options.

3 Nighttime Airflow Control (cont.)

Default start time for Nighttime Airflow is 10:00pm but can be changed using User Option 1 to change the Night Schedule Start Time.

Default airflow level upstairs is 130%. If a different airflow level is desired, use User Option 4 to change the airflow level in heating and User Option 5 to change the airflow level in cooling.

4 Set the Nighttime Airflow in Heating

This option is not be displayed if Airflow Control has been turned off.

This option is used to change the default nighttime airflow in heating of 130% to a user desired airflow level, not to exceed installer limits.
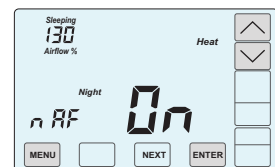
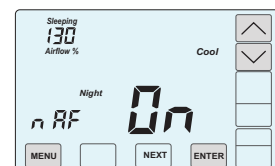Touch the MENU key to display NIGHTTIME, UPSTAIRS AIRFLOW IN HEATING indicated by nAF Heat.

Use the UP/DOWN keys to adjust the airflow.

Touch the MENU key to save and go to next option or touch the ENTER key to save the option.

5 Set the Nighttime Airflow in Cooling

This option is not displayed if Airflow Control has been turned off.

This option is used to change the default nighttime airflow in cooling of 130% to a user desired airflow level, not to exceed installer limits.

Touch the MENU key to display NIGHTTIME, UPSTAIRS AIRFLOW IN COOLING indicated by nAF Cool.

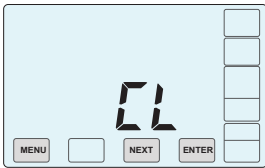Use the UP/DOWN keys to adjust the airflow.

Touch the MENU key to save and go to next option or touch the ENTER key to save the options.
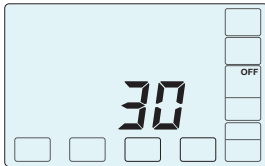
USER OPTIONS (continued)

6 Clean the Touch Screen

This option disables the touch screen for 30 seconds to enable the user to clean the touch screen by wiping down with a soft, damp cloth.
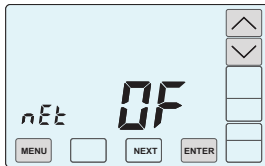
Touch the MENU key to display CLEAN DISPLAY option indicated by CL. To exit the option, touch NEXT.
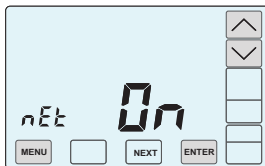
Touch ENTER to start the 30 second count down. The touch screen is disabled during this time.

7 Turn Thermostat WiFi On
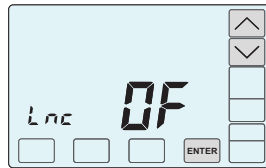
This option turns WiFi access On or Off.

Touch the MENU key to display WiFi On or Off option indicated by NEt.

Touch the UP key to turn WiFi ON.

8 Start Linking WiFi Thermostat

This option starts the linking of the EvenAir thermostat to the home's WiFi network.

Touch the MENU key to display WiFi linking option On or Off indicated by Lnc.

Touch the UP key to select ON. Touch the ENTER key to start the linking sequence.

During the linking sequence "WiFi" will blink indicating the thermostat is trying to link to the home network. Once the thermostat has linked, "WiFi" will be on continuously indicating a connection.
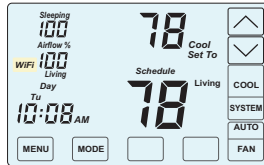
INSTALL / REPLACE AA BATTERIES

Two AA batteries power the clock when 24VAC power is lost. Slide the battery cover downward and install the two AA batteries, paying attention to the polarity.
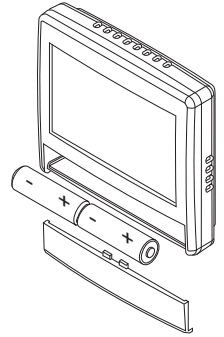
User Options (Homeowner)

01	Factory Set Schedule	Schedule Default Settings			Record User Selection if Changed from Default Setting		
	Monday through Friday	Time	Heat	Cool	Time	Heat	Cool
	Morn	6:00 AM	70	75			
	Day	8:00 AM	62	83			
	Even	6:00 PM	70	75			
	Nite	10:00 PM	62	78			
	Saturday and Sunday	Time	Heat	Cool	Time	Heat	Cool
	Morn	6:00 AM	70	75			
	Day	8:00 AM	62	83			
	Even	6:00 PM	70	75			
	Nite	10:00 PM	62	78			
NA		Display	Range	Default	Record User Selection if Changed from Default Setting		
02	Automatic Airflow Control (requires Installer Option 18 enabled or will not show up as a User Option	A Ac	On or Off	On			
03	Nighttime Airflow Control	n AF	On or Off	On			
04	Set the Nighttime Airflow in Heating (will only show if Nighttime Airflow Control is ON)	nAF + Heat	%	130%			
05	Set the Nighttime Airflow in Cooling (will only show if Nighttime Airflow Control is ON)	nAF + Cool	%	130%			
06	Turning WiFi On/Off	nEt	On or Off	Off			
07	Link Thermostat to Wireless network	Lnc	On or Off	Off	N/A		
08	Clean the Touch Screen (in seconds)	CL	N/A	30	N/A		

P/N 780101703 3/18 Rev A

This manual is separated into two different sections: one for the Homeowner and one for the System Installer.

The Installer section contains setup and installation information of the thermostat with optional user settings available to the homeowner.

INSTALLATION

⚠ CAUTIONS

- Before installing the EvenAir comfort system, turn off all power to your HVAC system.

- Read and follow all instructions carefully.

- Read entire manual before installing EvenAir products.

- Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes.

- Use cautions when mounting components to surfaces that may have concealed wiring beneath the surface.

- When servicing EvenAir system or accessing products, turn off all power to these items.

❶ ATTENTION INSTALLER

1) Install and wire components to the thermostat. (see Wiring section)

2) Place the thermostat on the subbase. Do not install batteries.

3) Turn power to the HVAC equipment On.

4) Check for Error Messages. (see Error Message section)

5) Set equipment options 1-5 if different than factory default settings. (see Installer Options section).

6) Test the installation using the Installer Test Menu. (see Installer Test Menu section on page 13)

7) Install batteries and set the time and day (see Installing Batteries and Set Time and Day section)

- Airflow Control Off Option 17 turns off Airflow Control. The thermostat controls the system, dampers fully open, nighttime airflow control is disabled and airflow is no longer displayed on the thermostat.

- User Airflow Control can be enabled using Option 18. User turns off automatic airflow control in the User Options.

- Nighttime Airflow Control is defaulted to ON. If bedrooms are located downstairs, consider turning this option Off using the User Options if bedrooms are not on the same trunk.

REMOVE SUBBASE

Place a slotted screwdriver in the slots as shown and rotate to remove subbase from the thermostat housing.
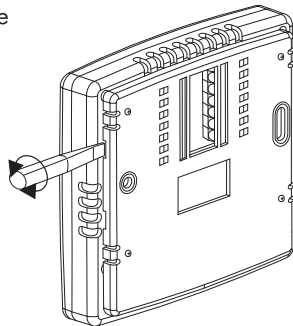
ATTACH SUBBASE TO WALL

Attach the subbase to an interior wall and about 5-feet above the floor as shown using the screws and wall anchors supplied.

The wires to the dampers, HVAC equipment and the temperature sensor pass through the opening between the terminals.
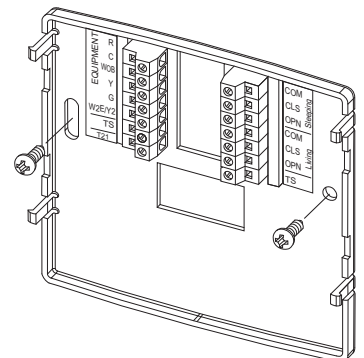
INSTALL DAMPERS

Install a damper with an AMT actuator in the duct supplying air to the sleeping area and wire the terminals to the corresponding terminals on the T21. Install a second damper with an AMT actuator in the duct supplying air to the living area and wire it to the T21. Each damper uses 2.4VA of power.

🛈 Ensure that damper installation does not cause obstruction to the damper blade.

When two or more dampers are required to define the sleeping or living area, the damper may be wired in parallel. LEDs on the damper actuator indicate when the damper is fully open (green) or fully closed (red). When properly installed, the dampers will never fully close.
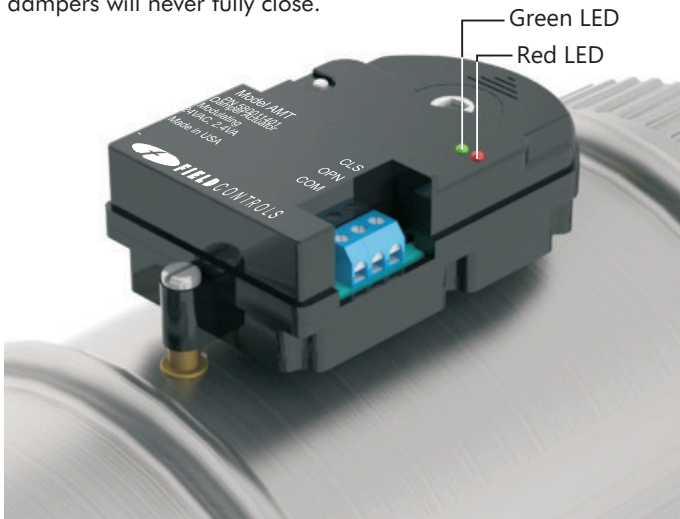
DAMPER WIRING
⚠ Warning!

Turn the power to the HVAC equipment off before wiring.

Use 3-conductor, 18 or 20 gage, thermostat cable to wire from the T21 Thermostat to the sleeping and living area dampers. There are separate terminals for the sleeping and living area dampers.

🛈 Ensure the damper for the sleeping area is wired to the terminals labeled SLEEPING and the damper for the living area is wired to the terminals labeled LIVING.

T21 Terminal	Wire Color	Damper Terminal	Function
COM	White	COM	Common
CLS	Red	CLS	Closes Damper
OPN	Green	OPN	Opens Damper

Multiple dampers can be used to construct the sleeping or living zones. Daisy chain terminals– COM to COM, OPN to OPN and CLS to CLS.

WIRING
⚠ Warning!

Turn the power to the HVAC equipment off before wiring.

Gas/Electric, 2H/1C

Use 6-conductor, 18 or 20 gage, thermostat cable.

T21 Terminal	Wire Color	Equipment Terminal	Function
R	Red	R, Rc, Rh	24VAC Power
C	Blue	C	Common
W/OB	White	W, W1	Stg1 Heating
Y1	Yellow	Y, Y1	Cooling
G	Green	G	Fan
W2E/Y2	Brown	W2	Stg2 Heating

Gas/Electric, 1H/2C

Use 6-conductor, 18 or 20 gage, thermostat cable.

T21 Terminal	Wire Color	Equipment Terminal	Function
R	Red	R, Rc, Rh	24VAC Power
C	Blue	C	Common
W/OB	White	W, W1	Stg1 Heating
Y1	Yellow	Y, Y1	Stg1 Cooling
G	Green	G	Fan
W2E/Y2	Brown	Y2	Stg2 Cooling

Heat Pump, 1 Compressor

Use 6-conductor, 18 or 20 gage, thermostat cable.

T21 Terminal	Wire Color	Equipment Terminal	Function
R	Red	R, Rc, Rh	24VAC Power
C	Blue	C	Common
WOB	White	O or B	Rev Valve
Y1	Yellow	Y, Y1	Compressor
G	Green	G	Fan
W2E/Y2	Brown	W, W2 or E	Aux Heat

Heat Pump, 2-Compressor

Use 6-conductor, 18 or 20 gage, thermostat cable.

T21 Terminal	Wire Color	Equipment Terminal	Function
R	Red	R, Rc, Rh	24VAC Power
C	Blue	C	Common
WOB	White	O or B	Rev Valve
Y1	Yellow	Y, Y1	Stg1 Compressor
G	Green	G	Fan
W2E/Y2	Brown	Y2	Stg2 Compressor

INSTALLER SECTION
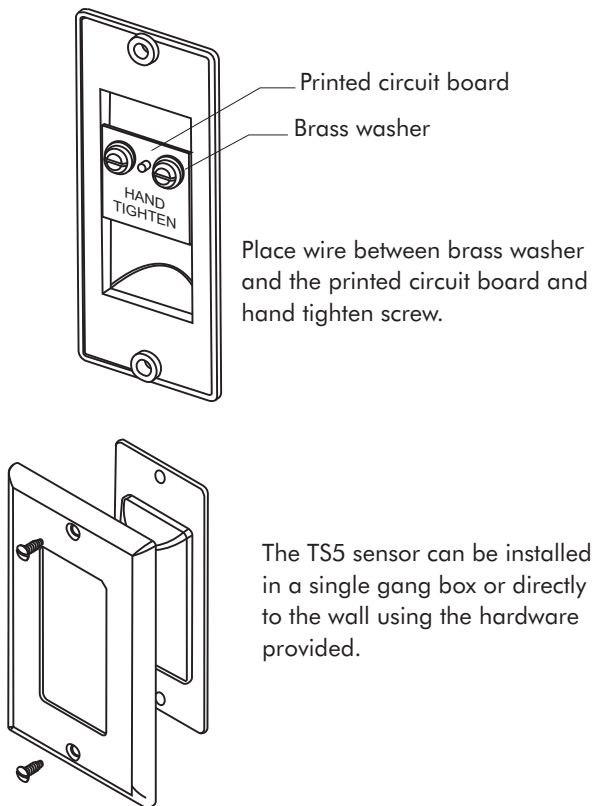
TEMPERATURE SENSOR WIRING

⚠ Warning!
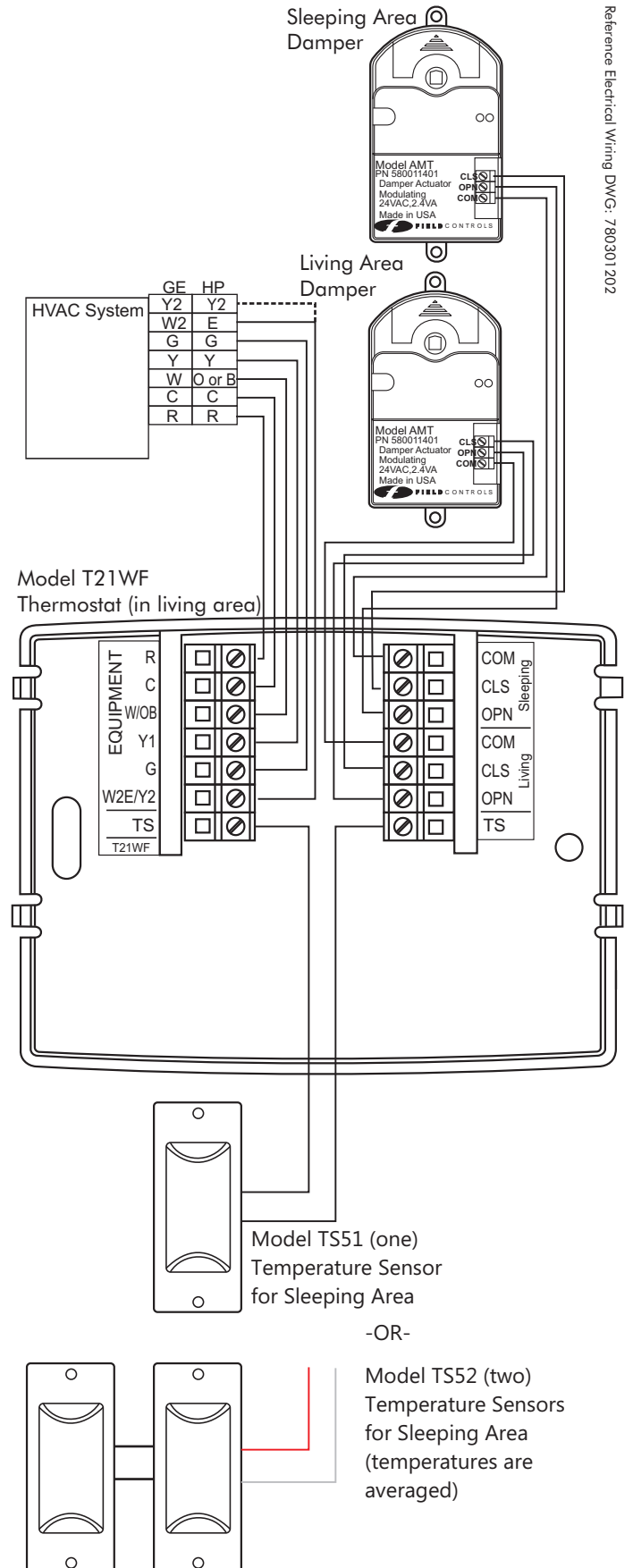
Turn the power to the HVAC equipment off before wiring.

Use 2-conductor, 18 or 20 gage, thermostat cable to wire from the T21WF Thermostat to the temperature sensor in the sleeping area.

❗ Single Sensor Installation
Use one (1) Model TS51 sensor.

❗ Dual Sensor Installation
Use two (2) Model TS52 sensors.

T21WF Terminal	Wire Color	Sensor Terminal	Function
TS	White	SNR	Thermistor
TS	Red	SNR	Thermistor

Printed circuit board

Brass washer

Place wire between brass washer and the printed circuit board and hand tighten screw.

The TS5 sensor can be installed in a single gang box or directly to the wall using the hardware provided.

WIRING DIAGRAM

Sleeping Area Damper

Model AMT
PN 580011401
Damper Actuator
Modulating
24VAC,2.4VA
Made in USA

Living Area Damper

Model AMT
PN 580011401
Damper Actuator
Modulating
24VAC,2.4VA
Made in USA

HVAC System

GE	HP
Y2	Y2
W2	E
G	G
Y	Y
W	O or B
C	C
R	R

Model T21WF Thermostat (in living area)

EQUIPMENT
R
C
W/OB
Y1
G
W2E/Y2
TS
T21WF

COM
CLS Sleeping
OPN
COM
CLS Living
OPN
TS

Model TS51 (one) Temperature Sensor for Sleeping Area

-OR-

Model TS52 (two) Temperature Sensors for Sleeping Area (temperatures are averaged)

Reference Electrical Wiring DWG: 780301202

INSTALLER SECTION

INSTALLER OPTIONS

These set up features should only be accessed by a qualified installer during initial EvenAir thermostat installation set up. The homeowner would not normally access these product set up features.

Option	Description	Display	Range	Default	Record Installed Selection if Changed from Default Setting
01	Equipment Type		GE or HP	Gas/Electric	
02	Reversing Valve *(Only displayed if HP selected in Option 1)*	rEV	o or b	O	
03	Compressor Stages	Cpr	0 or 1 (GE), 0 to 2 (HP)	1 (GE), 2 (HP)	
04	Heating Stages	Htg	0, 1 or 2	1	
05	Fan Operation. *(Only displayed if GE selected in Option 1)*	Fan	GA(Down) or EL(Up)	GA	
06	Compressor Minimum Off Time (minutes).	Cot	0 to 9	2	
07	Gas Minimum Off Time (minutes).	HOt	0 to 9	0	
08	Minimum Run Time (minutes).	r n t	0 to 9	2	
09	On-Off Temperature Differential 0 Cooling On 1° above setpoint, Off at setpoint. Heating On1° below setpoint, Off at setpoint. 1 Cooling On 1° above setpoint, Off .5° below setpoint. Heating On1° below setpoint, Off .5° above setpoint. 2 Cooling On 1° above setpoint, Off 1° below setpoint. Heating On1° below setpoint, Off 1° above setpoint.	O O °	0, 1 or 2	1	
10	Smart Recovery.	S r	On(Up) or Off(Down)	Off	
11	Vacant Heating Setpoint.	V A C + Heat	44 to 75	65	
12	Vacant Cooling Setpoint.	V A C + Cool	74 to 95	80	
13	Calibrate Living Area Sensor	C A L	+/- 5	0	
14	Calibrate Sleeping Area Sensor.	C A L	+/- 5	0	
15	Airflow Update Time	A F t	1 to 20 minutes	2	
16	Night Level LCD Backlight	BL + Night	On(Up) or Off(Down)	On	
17	Airflow Control On or Off	AFC	On(Up) or Off(Down)	On	
18	Enable User Airflow Control	UAC	On(Up) or Off(Down)	Off	
19	Up Stage Time	USt	5 to 30 minutes	10	
20	Maximum Airflow in Heating to the Sleeping Area.	HAF+Heat	100 to 160%	150%	
21	Maximum Airflow in Cooling to the Sleeping Area.	CAF+Cool	100 to 160%	140%	
22	Maximum Airflow in Heating to the Living Area.	HAF+Heat	100 to 160%	150%	
23	Maximum Airflow in Cooling to the Living Area.	CAF+Cool	100 to 160%	140%	
24	Maximum Temperature Difference Between Sleeping and Living area.	diF	0 to 10F	2F	
25	Factory Restore	Fr	No(Next or Enter) or Yes(UP Key then ENTER)	No	N/A

INSTALLATION NOTES:

_____

_____

_____

ACCESSING INSTALLER OPTIONS

To access the Installer Options, TOUCH and HOLD the hidden Enter key for 7 seconds until the first Option appears on the screen.
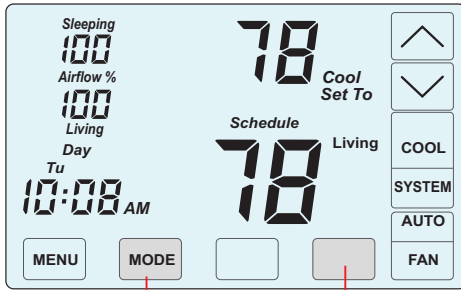
The hidden BACK key can be used to return to previous options.

TOUCH and HOLD this key for 7 seconds to access the Installer Options.

⓵ Press the touchscreen with your fingertip only, using a firm touch. Do not use a sharp object such as a pen or pencil.

⓵ The NEXT key is used to display the next option.

⓵ The ENTER key is used to save options and return to normal thermostat operation.

⓵ The hidden BACK key is used to return to previous options and is located to the left of the NEXT key.

01 Selecting the Equipment Type

Factory Default: GE. Range: GE or HP

This option is used to select gas/electric or heat pump equipment.

Use the UP/DOWN keys to select gas/electric (GE) or heat pump (HP).

Touch NEXT or ENTER.
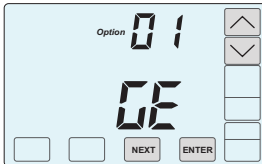
02 Reversing Valve

(Only displayed if Heat Pump equipment, HP is selected in Option 01)
Factory Default: O. Range: o or b

This option is used to select an O or B type reversing valve.

Use the UP/DOWN keys to select o for O-Type or b for B-Type.

Touch NEXT or ENTER.
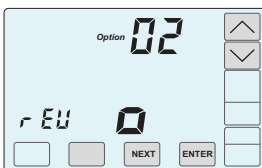
03 Setting the Compressor Stages

Factory Default: 1 . Range: 0 or 1

This option is used to set the number of compressor stages.

Use the UP/DOWN keys to set 0 or 1 stage.

Touch NEXT or ENTER.
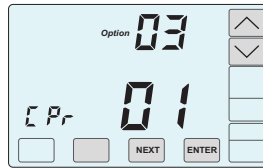
04 Setting the Heating Stages

Factory Default: 1 Stage. Range: 0, 1 or 2

Use the UP/DOWN keys to set 0, 1 or 2 stage.

Touch NEXT or ENTER.
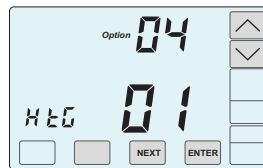
05 Setting the Fan Operation

(Only displayed if Gas/Electric equipment, GE, is selected in Option 01)
Factory Default: Gas. Range: GA or EL

Use the UP key to select "EL" for electric operation where the thermostat activates the indoor fan (G terminal) during heating calls or DOWN key to select GA for gas operation where the equipment plenum sensor activates the indoor fan in heating calls.
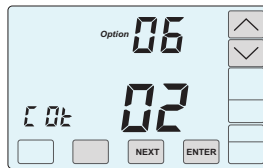
Touch NEXT or ENTER.
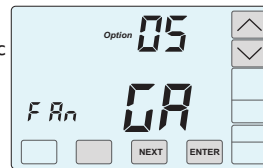
06 Compressor Minimum Off Time

Factory Default: 2 Min. Range: 0 to 9 Min.

Use the UP/DOWN keys to change the minimum off time (minutes) before restarting the compressor.
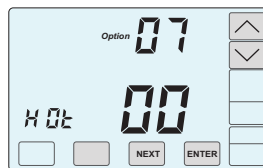
Touch NEXT or ENTER.

07 Heating Minimum Off Time

Factory Default: 0 Min. Range: 0 to 9 Min.

Use the UP/DOWN keys to change the minimum off time (minutes) before restarting a gas furnace or electric strip heater.
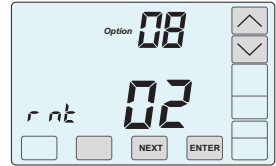
Touch NEXT or ENTER.

08 Minimum Run Time

Factory Default: 2 Min. Range: 0 to 9 Min.

Use the UP/DOWN keys to change the minimum run time (minutes) before turning a system off.
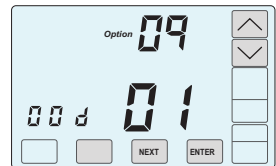
Touch NEXT or ENTER.

09 Setting On-Off Temp Differential

Factory Default: #1. Range: 0, 1 or 2.

Use the UP/DOWN keys to select 0, 1, 2.

Touch NEXT or ENTER.

Differential Mode0 1.0º On/Off Span.
Differential Mode1 1.5º On/Off Span.
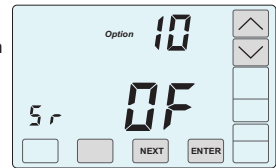Differential Mode2 2.0º On/Off Span.

10 Smart Recovery

Factory Default: Off. Range: On or Off.

Smart recovery initiates a heating or cooling call so that the space is at temperature when the setback period ends.

Use the UP key to select ON to turn on smart recovery or the DOWN key to select OF to turn smart recovery off.
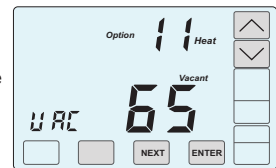
Touch NEXT or ENTER.

11 Vacant Heating Setpoint

Factory Default: 65ºF. Range: 44ºF to 75ºF

Use the UP/DOWN keys to select the heating temperature when the space is vacant.
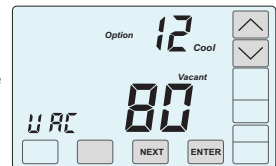
Touch NEXT or ENTER.

12 Vacant Cooling Setpoint

Factory Default: 80ºF. Range: 74ºF to 95ºF

Use the UP/DOWN keys to select the cooling temperature when the space is vacant.
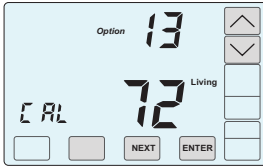
Touch NEXT or ENTER.

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13 Calibrate Living Area Temperature Sensor

Factory Default: None.   Range - +/-5°

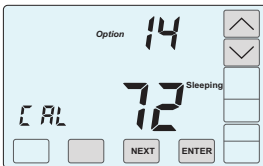Use the UP/DOWN keys to change the Living area temperature to the temperature that the user feels is correct.

Touch NEXT or ENTER.

14 Calibrate Sleeping Area Temperature Sensor

Factory Default: None.   Range - +/-5°

Use the UP/DOWN keys to change the Sleeping area temperature to the temperature that the user feels is correct.

Touch NEXT or ENTER.

15 Airflow Update Time

Factory Default: 2 Min. Range: 1 to 20 Min.

This is the frequency, in minutes, that the damper position is updated.

Use the UP/DOWN keys to set the time in minutes to update the sleeping and living area airflow.
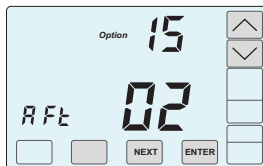
Touch NEXT or ENTER.

16 Night Level LCD Backlight

Factory Default: On. Range: On or Off.

The LCD has a low level backlight that can be used as a night light.

Use the UP key to turn the low level backlight ON or touch the DOWN key to turn OFF.
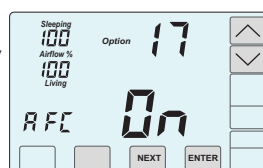
Touch NEXT or ENTER.

17 Airflow Control, On or Off

Factory Default: On. Range: On or Off.

This option turns the automatic airflow control on or off. If off, the dampers fully open, nighttime airflow options are disabled and airflow is no longer displayed on the thermostat.

Use the UP key to select ON for airflow control or touch the DOWN key to select OFF to disable airflow control.
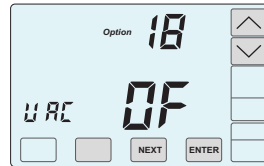
Touch NEXT or ENTER.

If Airflow Control was off and is now being turned on, the Nighttime Airflow option can be turned on using the User Options.

18 Enable USER Airflow Control

Factory Default: Off. Range: On or Off.

Homeowners with an unusual work schedule, home office, etc. may want to use this option. When turned On, this option enables the user to turn off automatic airflow control in the User Options. Airflow is adjusted by the homeowner. Nighttime Airflow option is still enabled but can be turned off using the User Options.

Use the UP key to select ON to enable the user to turn off automatic airflow control in the user options.
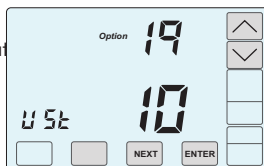
Touch NEXT or ENTER.

19 Upstaging Time

Factory Default: 10 min. Range: 5 to 30 min.

Use the UP/DOWN keys to set the time at which second stage heating or cooling is activated.
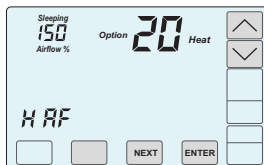
Touch NEXT or ENTER.

For options 20 - 23, use the installer test on the following page to determine the maximum allowable airflow.

20 Maximum Airflow in Heating to Sleeping Area

Factory Default: 150%.   Range: 100% to 160%.

Use the UP/DOWN keys to select the maximum allowable airflow in heating to the sleeping area.
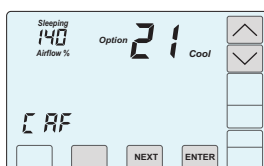
Touch NEXT or ENTER.

21 Maximum Airflow in Cooling to the Sleeping Area

Factory Default: 140%.   Range: 100% to 160%.

Use the UP/DOWN keys to select the maximum allowable airflow in cooling to the sleeping area.
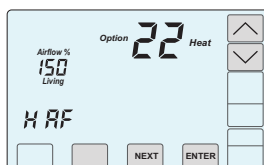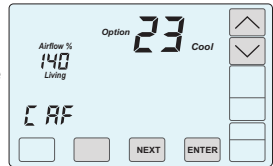
Touch NEXT or ENTER.

22 Maximum Airflow in Heating to the Living Area

Factory Default: 150%.   Range: 100% to 160%.

Use the UP/DOWN keys to select the maximum allowable airflow in heating to the living area.
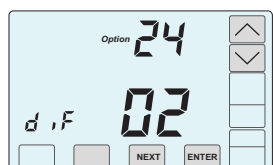
Touch NEXT or ENTER.

23 Maximum Airflow in Cooling to the Living Area

Factory Default: 140%.   Range: 100% to 160%.

Use the UP/DOWN keys to select the maximum allowable airflow in cooling to the living area.

Touch NEXT or ENTER.

24 Maximum Temperature Differential

Factory Default: 2ºF.   Range: 0º to 10º F

This is the maximum allowable temperature difference between the sleeping and living area temperatures. When the temperature difference is equal to or greater than the allowed differential, the airflow is adjusted.

Use the UP/DOWN keys to select the maximum allowable temperature difference between the sleeping and living area.
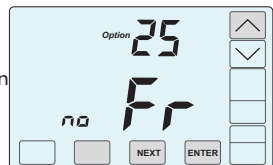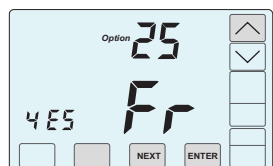
Touch NEXT or ENTER.

25 Factory Restore

WARNING! Factory Restore resets ALL settings.

To exit this option, touch NEXT or ENTER, or the hidden Back key.

To restore factory settings, touch the UP key to display YES then touch ENTER.

INSTALLER SECTION

ACCESSING THE TEST MENU

The Test Menu is used to test the Indoor Fan Operation, Allowable Heating Airflow Limits and Allowable Cooling Airflow Limits.

The Test Menu can also be used to perform the HERS Total Airflow test. TEST 05-06 activates a cooling call and opens both dampers to 100% enabling the installer to perform the test.

To access the Test Menu, TOUCH and HOLD the hidden Next key for 7 seconds until the fan test screen (TEST 01) appears.
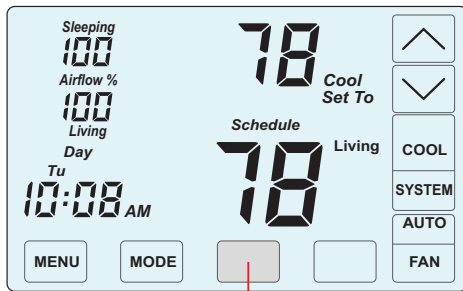
TOUCH and HOLD this key for 7 seconds to access the Installer Options.
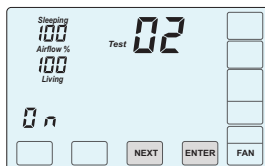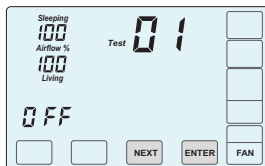
01-02 Testing Indoor Fan Operation

This test is used to verify that the indoor fan is operating correctly.

In TEST 1, the Fan is Off.

Touch NEXT to go to TEST 2 to turn on the indoor fan. Verify the fan is operating and delivering airflow to the sleeping and living area.

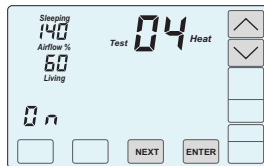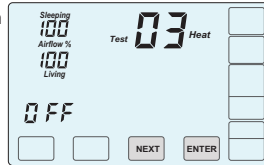Touch NEXT to go to Testing Heating Airflow Limits.

03-04 Testing Heating Airflow Limits

This test is used to determine the maximum allowable airflow to the sleeping area and the living area in HEATING.

In TEST 3, the system is Off.

Touch NEXT to go to TEST 4 to activate heating. Verify the equipment is operating.

To determine the maximum allowable airflow to the Sleeping Area, touch the UP key until the airflow is too great and causes noise or annoyance. Lower the airflow using the DOWN key until it is acceptable. This is the maximum allowable airflow in heating to the sleeping area. Record the airflow value.

Maximum Allowable Airflow in Heating to the Sleeping Area ☐

To determine the maximum allowable airflow to the living area, touch the DOWN key until the airflow is too great

and causes noise or annoyance. Increase the airflow using the UP key until it is acceptable. This is the maximum allowable airflow in heating to the living area. Record the airflow value.

Maximum Allowable Airflow in Heating to the Living Area ☐

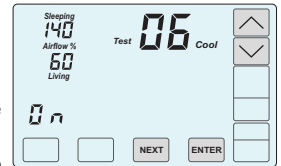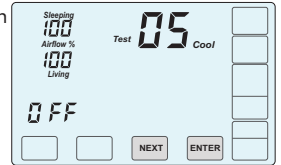Touch NEXT to go to Testing Cooling Airflow Limits.

05-06 Testing Cooling Airflow Limits

This test is used to determine the maximum allowable airflow to the Sleeping and Living Areas in COOLING.

The test can also be used to perform the HERS Total Airflow test. The test activates a cooling call and opens both dampers to 100%.

In TEST 5, the system is Off.

Touch NEXT to go to TEST 6 to activate cooling. Verify the equipment is operating.

To determine the maximum allowable airflow to the sleeping area, touch the UP key until the airflow is too great and causes noise or annoyance. Lower the airflow using the DOWN key until it is acceptable. This is the maximum allowable airflow in cooling to the sleeping area. Record the airflow value.

Maximum Allowable Airflow in Cooling to the Sleeping Area ☐

To determine the maximum allowable airflow to the Living Area, touch the DOWN key until the airflow is too great

and causes noise or annoyance. Increase the airflow using the UP key until it is acceptable. This is the maximum allowable airflow in cooling to the living area. Record the airflow value.

Maximum Allowable Airflow in cooling to the Living Area ☐

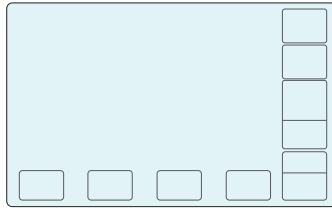Touch ENTER to end testing and return to normal thermostat operation.

Enter the maximum airflow limits using Options 20 through 23 of the installer menu.
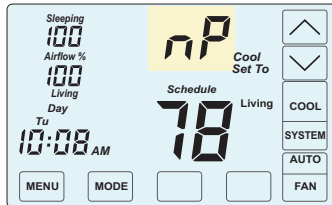
⚠ Error Messages:

Blank LCD

When the equipment is powered up, a blank LCD indicates that there is no power to the thermostat. Check the wiring from the thermostat to the equipment for errors.
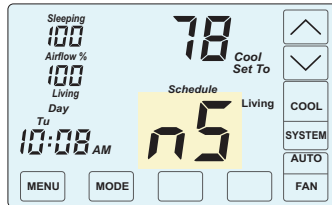
No Power Message

nP is displayed when there is no power to the system. If the message is displayed when the system is powered, check the wiring from the thermostat to the system for errors.

Sensor Error Message

nS is displayed when there is an error with the temperature sensor(s). Check for open wires or shortages.

When the nS message is displayed, the thermostat will continue to control the system and automatically opens both dampers and disables airflow control until the sensor error is corrected.

⚠ Install batteries only after successfully testing the installation using the Installer Test Menu.

INSTALL BATTERIES

The batteries power the clock when 24VAC power is lost. Slide the battery cover downward and install the two AA batteries as shown.
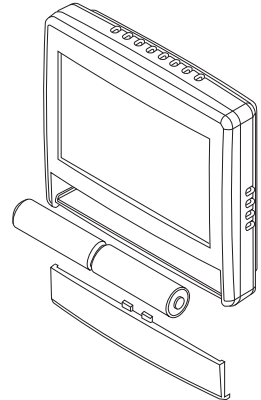
⚠ Press the touchscreen with your fingertip only, using a firm touch. Do not use a sharp object such as a pen or pencil. The touchscreen is a resistive touch and responds differently than touchscreens found in smart phones/devices.
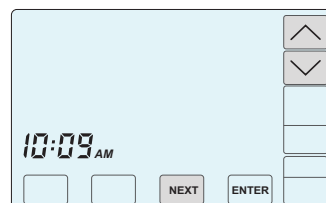
Set Time and Day

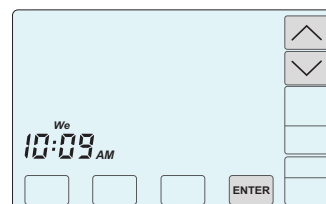Touch here to change the time and day of the week.
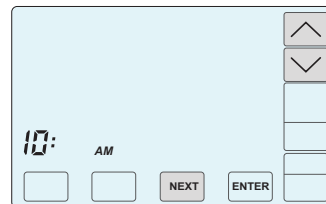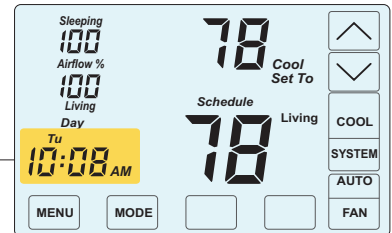
CHANGE THE HOUR

Touch the UP/DOWN keys to change the HOUR. Touch NEXT.

CHANGE THE MINUTE

Touch the UP/DOWN keys to change the MINUTE. Touch NEXT.

CHANGE THE DAY OF THE WEEK

Touch the UP/DOWN keys to change the DAY OF THE WEEK.

Touch ENTER to save and return to normal thermostat operation.

MAINTENANCE AND TROUBLESHOOTING

DAMPER OPERATION

Problem - No airflow to the sleeping area AND living area registers

Turn system off immediately. Both dampers may be wired backwards at the subbase or at the damper actuator (closing rather than opening).

Problem - No airflow to the sleeping area OR living area registers

Turn system off. One of the dampers may be wired backwards at the subbase or at the damper actuator (closing rather than opening).

Problem - When directing airflow to the sleeping area, the airflow is actually directed to the living area, and when directing the airflow to the living area, the airflow is actually directed to the sleeping area.

Turn system off. Check if the dampers are switched (sleeping area damper is wired to the living area terminals and the living area damper is wired to the sleeping area terminals.)

SENSOR INSTALLATION

Problem - nS message on thermostat.

Check that the sensor is wired correctly. Check for a short in the sensor wiring.

Problem - Sleeping area temperature reading very high or very low.

Check that the correct sensor(s) have been used. One TS51 sensor is used in a single sensor installation. Two TS52 sensors are used in a dual sensor installation.

COMFORT CONCERNS

Problem - Downstairs bedroom is too cold or too hot at night.

The Nighttime Airflow Control option directs more airflow to the sleeping area and less airflow to the unoccupied living area. If the downstairs bedroom is on the same HVAC trunk as the living area, the downstairs bedroom may become uncomfortable at night. Turn off the Nighttime Airflow Control option using the User Options.

Problem - The room temperature on the thermostat seems too high or too low.

The thermostat is factory calibrated within 1 degree. However, if a homeowner finds the temperature "feels" too high or too low, the thermostat can be calibrated to what the homeowner feels is the correct temperature using Installer option 13 for the living area and option 14 for the sleeping area.

SPARE PARTS AND ACCESSORY LIST

Field Controls Part Number	Model Number	Description
580011101	T21	Programmable wired thermostat w/ airflow control for GE equipment with 1H/1C, 2H/1C or 1H/2C, or HP equipment with 2H/2C
580011102	T21WF	Programmable wired thermostat w/ airflow control for GE equipment with 1H/1C, 2H/1C or 1H/2C, or HP equipment with 2H/2C. WiFi Enabled
580011301	TS51	Wired temperature sensor for the sleep area. Single sensor installation.
580011302	TS52	Wired temperature sensor for the sleep area. Dual sensor installation.
580011401	AMT	Replacement modulating actuator control, 3 wire.
580011405	IS	Replacement idler shaft for AMT and AMJ actuators.
580011406	DS	Replacement drive shaft for AMT and AMJ actuators.
	MD-#	EvenAir Round Balance Damper, 3 Wire. Sizes - 4" - 20" diameter.
	MD-LxH	EvenAir Rectangular Balance Damper, 3 Wire. Sizes - 8", 10" and 12" Heights, up to 24" Length.

This manual may be downloaded and printed from the Field Controls website (www.fieldcontrols.com)

WARRANTY
For warranty information about this or any Field Controls product, visit:
www.fieldcontrols.com

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